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A FOSSIL SKUNK FROM SAMOS

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In 1924, Mr. Barnum Brown, representing the American Museum of Natural History, made several excavations for the purpose of obtaining fossil vertebrates in the Aegean Island of Samos near the classic site north of the village of Mytilini. There Forsyth Major in 1887 and 1889 had collected the first fossils which he subsequently made known to the scientific world. Other collections have, from time to time, been made since then, and partially described, but much remains to be done on Major's original material as well as on the later finds.

The specimen which forms the subject of the present paper is in Mr. Barnum Brown's Samos collection and through his kindness was entrusted to me for description. It consisted of the conjoined skull and mandible which have been skilfully disunited by Mr. Albert Thomson with a minimum damage. It is by far the most perfect specimen of a fossil skunk skull known and may be referred to the extinct genus *Promephitis*, which was established by Gaudry for a specimen from Pikermi. It represents a new species of that genus, to which the name *majori* may be affixed in honor of the distinguished palaeontologist to whom we owe the discovery of the Samos deposit.

The fossil fauna of Samos has long been recognized as approximately contemporaneous with that of Pikermi, and has been assigned to the Pontian stage, which according to the most general opinion is included in the Lower Pliocene.

Pocock (1921, p. 82X) has advocated the separation of the mustelid genera, *Mephitis* and its allies, as a subfamily distinct from the Melinae, in which they were formerly included. In a recent paper (Pilgrim, 1933, p. 864) I have adduced additional arguments in favor of this and have associated in a single subfamily, Mephitinae, the Javan genus *Mydaus* with the living skunks, which have been divided into the three genera *Mephitis*, *Conepatus*, and *Spilogale*, as well as the fossil genera *Brachyprotoma* Brown, *Promephitis* Gaudry and *Trocharion* Major.

PROMEPHITIS Gaudry, 1861

Promephitis GAUDRY, 1861, C. R. Acad. Sci., Paris, LII, p. 722.

GENOTYPE.—*Promephitis lartetii* GAUDRY, 1861, C. R. Acad. Sci., Paris, LII, p. 722; 1862, Anim. Foss. Attique, p. 46, Pl. VI, figs. 5–7.

DIAGNOSIS.—Mephitinae with short, broad occiput; face broad and especially shortened; brain case more or less flattened; auditory bulla much depressed; mastoid and paroccipital processes strong; zygomatic arch strongly curved; palate not extended behind the last molars; premolar series reduced; P^1 absent; P^2 absent or vestigial; P^4 long, with protocone not extending more than half the length of the tooth; M^1 transverse greater than anteroposterior diameter, anteroposterior diameter equal to or less than that of P^4; mandibular ramus robust, deep, symphysis gradual; P_1 absent; M_1 much longer than premolar series, talonid approximately equal to trigonid, paraconid slightly oblique to protoconid, metaconid strong, slightly lower than protoconid, entoconid low, ridge-like; M_2 small round, single-rooted, crown basin-shaped, with one or two low cusps internally and externally.

Promephitis majori, new species

?*Promephitis lartetii* GAUDRY, Major, 1894, Le gisement ossifère de Mytilini, No. 334, p. 29.

TYPE.—Amer. Mus. No. 20585, and associated skull and mandible.

HORIZON AND LOCALITY.—Quarry I near old German excavations, district Adrianos on property owned by the Soufoulis family. About 1½ miles north of the village of Mytilini. Approximately in the middle of the Pontian strata.

DIAGNOSIS.—A *Promephitis* of smaller size than the hitherto known species; skull with upper profile more convex than *P. maeotica;* stronger post-orbital processes; occipital condyles less prominent; M^1 transverse diameter less than in *P. maeotica* or *P. lartetii*, anteroposterior diameter equal to instead of less than that of P^4; P^4 with a pronounced parastyle; P^1 and P^2 both absent; mandibular ramus with lower border not straight, but stepping up to the angle behind the level of the last molar; M_1 without the external cingulum of *P. maeotica* and *P. alexejewi.*

DESCRIPTION.—The skull and mandible are almost perfect, quite uncrushed, and lack no essential part. They belonged to an individual which had attained the adult state some time previous to its death, since the sutures are completely obliterated and all the teeth show considerable signs of wear. A crystalline matrix still fills some of the smaller cavities, from which it has proved difficult to remove it without injury to the specimen, and its presence obscures many of the foramina and some of the details of the surface. The right P^4 has only the inner edge of the protocone preserved and the left P^4 has lost the antero-external corner of the tooth, so that the presence of a parastyle can only be inferred by the fairly considerable space occupied by the anterior part of the root which has been broken off at the very base of the crown. The mandible is complete except for the right angle and condyle, the tip of both coronoid processes, the postero-external corner of the left M_2,

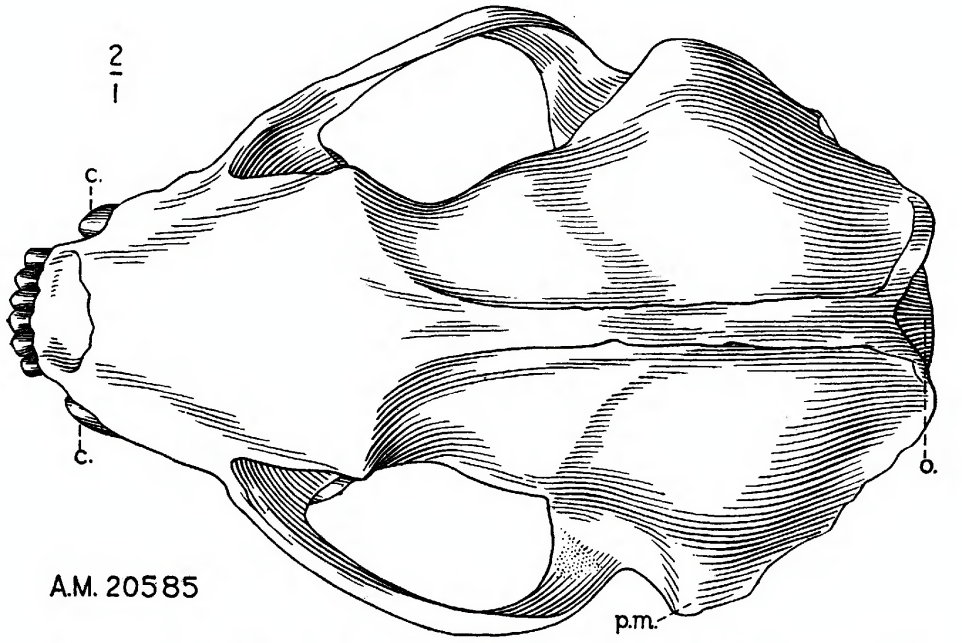

Fig. 1. *Promephitis majori*, A. M. N. H. No. 20585. Top view of skull. Twice natural size. c., canine; p.m., mastoid process; o., occipital.

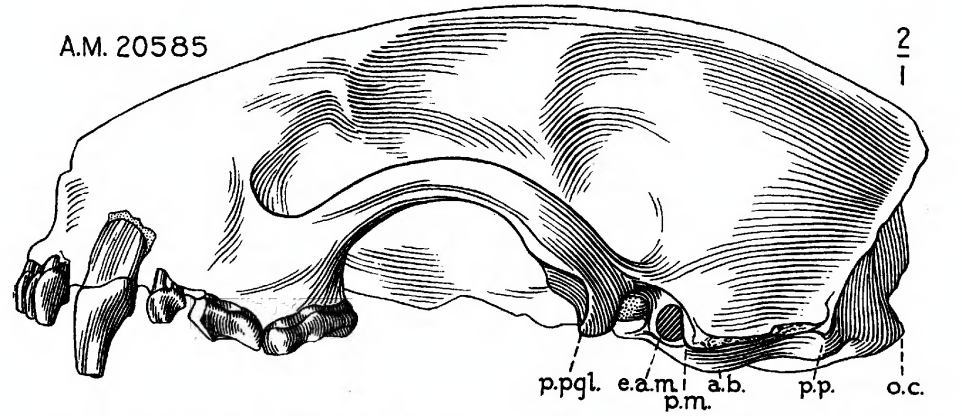

Fig. 2. *Promephitis majori*, A. M. N. H. No. 20585. Left side of skull. Twice natural size. p.pgl., processes postglenoideum; e.a.m., external auditory meatus; p.m., mastoid process; a.b., auditory bulla; p.p., paroccipital process; o.c., occipital condyle.

the inner edge of the right M_1 including the summit of the protoconid and the whole of the metaconid, and the right I_1.

SKULL.—The skull (figs. 1, 2) is short, as in all the living genera of skunks, the face partaking in the general shortening. The face in the Samos skull has, however, shortened more than in the genera *Mephitis* and *Conepatus* and agrees with that of *Spilogale*. The upper profile is gently arched, little less so than in *Mephitis* and *Conepatus*. *Spilogale* on the other hand has an almost straight profile. *Promephitis maeotica* seems to be intermediate between *P. majori* and *Spilogale*. From the mastoid region the brain case narrows rather rapidly to a point about 6 mm. behind the postorbital processes, and then the skull expands up to the rather strongly marked postorbital processes, gradually contracting forward to the end of the muzzle. This is like *Spilogale arizonae*, except that in the latter the skull is as a whole more slender and the postorbital processes more prominent. In both *Conepatus* and *Mephitis* the contraction behind the orbits and the expansion of the lower part of the brain case in the mastoid region are less marked, while the postorbital processes are almost or quite absent. Except for the weaker postorbital processes, *P. maeotica* seems to agree very closely with the Samos skull. The expansion of the brain case at the mastoid, combined with the abbreviation of the bulla and the glenoid, causes the angle included between the hinder edge of the zygomatic process of the squamosal and the margin of the skull just behind it to be acute, whereas in all the living genera this angle is either very obtuse or changed into a broad, rounded curve. The zygomatic arches are slender, and strongly bent upward, with the highest point at the middle of the arch. This is almost the same as in *Spilogale*. In *Mephitis* the upward curve is much less and the highest point of the arch lies somewhat behind the middle. In *Conepatus* the zygomatic arch is almost horizontal. The zygomatic arch projects outward but little beyond the mastoid process. In both *Mephitis* and *Conepatus* the width at the zygoma is much greater than at the mastoid.

Spilogale is narrower, and if its mastoid process were as prominent as in *P. majori*, there would be no difference in the width at the zygoma between them. In both of them, moreover, the zygomatic process juts out much more nearly at right angles to the axis than in *Mephitis* and *Conepatus*, while the temporal opening enclosed by the zygomatic arches and the brain case is wide relative to its length, in contrast to its much greater elongation in *Mephitis* and *Conepatus*. The orbit is rather narrow and elongate and its anterior end is opposite the hinder end of P^4. The infra-orbital foramen occupies the middle of a rather large, shallow fossa,

which is closely adjacent to the anterior edge of the orbit. The nasals extend rather far forward, so that the anterior narial foramina have a very small opening onto the upper surface of the muzzle, but face almost entirely forward, thus resembling *Spilogale* and *Mephitis* but differing greatly from *Conepatus*. Their shape on the palate is small and round as in *Spilogale*. The brain case (fig. 3) is markedly depressed, though less so than in *Spilogale*. It is higher and more arched in *Mephitis* and still more so in *Conepatus*. The sagittal crest is strong and broader than in any of the living genera, dividing into two branches which form the lambdoid crest some little way in front of the occipital crest. The lambdoid crest thus runs forward on each side of the median line as it approaches its highest point, so as to form a V-shaped outline when seen from above.

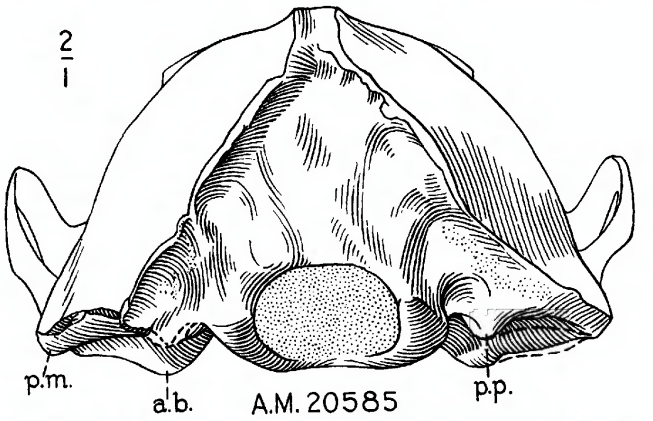

Fig. 3. *Promephitis majori*, A. M. N. H. No. 20585. Occipital view of skull. Twice natural size. p.m., mastoid process; a.b., auditory bulla; p.p., paroccipital process.

This character is much less noticeable in *Spilogale*, still less so in *Mephitis*, while in *Conepatus* the direction of the lambdoid crest is normal. The shape of the occipital as bounded by the prominent lambdoid crest is that of an inverted V, of which the angle is slightly less than a right angle; in *Spilogale* it is greater than a right angle, while in most species of *Mephitis* and *Conepatus* the occipital is of a semicircular shape. The occipital condyles are rather more prominent than in the living genera, and oblique, enclosing a larger foramen magnum than in the living genera. The basioccipital is extremely wide as in *Mephitis* and *Conepatus*, and much more so than in *Spilogale*. The mastoid process is very strong and projects outward almost as much as in *Conepatus* and *Mephitis*. In *Spilogale* it is much weaker. The paroccipital process is strong and much

expanded transversely at its base; it extends downward as far as the summit of the auditory bulla, thus forming an abrupt boundary between the tympanic and occipital regions as in *Mephitis*, unlike *Spilogale*, in which the paroccipital process is feeble and the passage from the tympanic into the occipital area is gradual. In *Conepatus* the passage is also gradual, except for the rather prominent but narrow paroccipital process. The auditory bulla is narrow and much depressed; its summit is but little lower than that of the meatal tube. This is a marked feature of

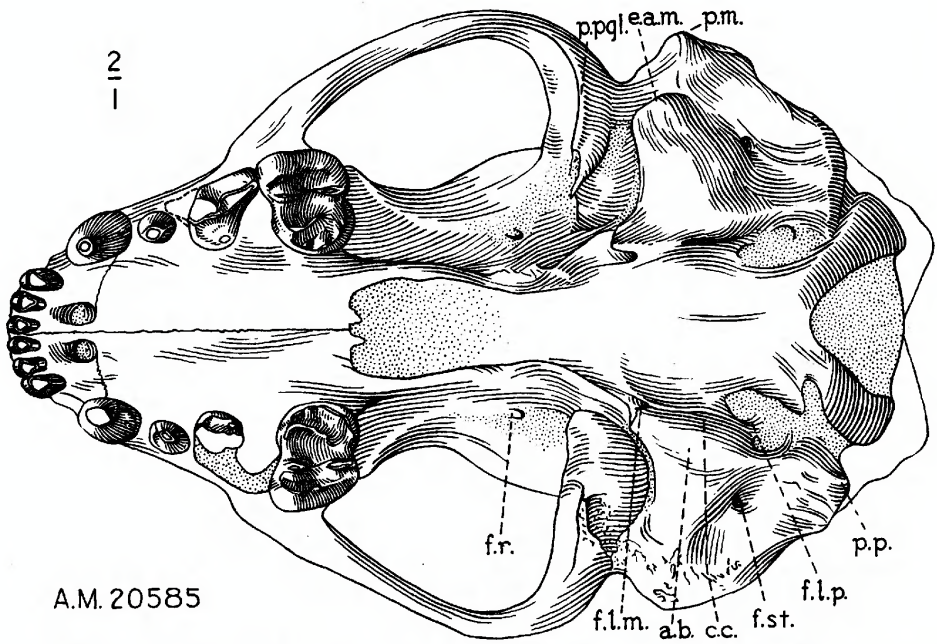

Fig. 4. *Promephitis majori*, A. M. N. H. 20585. Ventral view of skull. Twice natural size. p.pgl., processes postglenoideum; e.a.m., external auditory meatus; p.m., mastoid process; f.r., foramen rotunda; f.l.m., foramen lacerum medium; a.b., auditory bulla; c.c., carotid canal; f.s.t., foramen stylomastoideum; f.l.p., foramen lacerum posterius; p.p., paroccipital process.

difference from all the living genera, but especially so from *Spilogale*. The bulla (fig. 4) is short as in *Mephitis* and does not reach as far forward as the post-glenoid crest. The meatal tube is for the most part directed laterally and only very slightly forward, thus differing from all the living genera but most of all from *Spilogale*. The stylomastoid foramen is of moderate size and lies rather far back, being almost on the same level as the foramen lacerum posterius. As in *Conepatus* there is a large foramen

on the postero-internal side of the bulla which probably includes, as in the living genus, the foramen lacerum posterius and the condylar foramen. In *Mephitis* and *Spilogale* these foramina are smaller. In front of these and opposite the middle of the bulla is the posterior opening of the carotid canal, which apparently again emerges at the anterior end of the bulla where the foramen lacerum medius is well shown. The glenoid cavity is small; it is surmounted but not much overhung by the prominent, rather vertical post-glenoid crest which slopes steeply backward in a very different fashion from the almost horizontal position which it occupies in all the living genera. The palate is broad and as in *Mephitis* and *Spilogale* does not extend backward beyond the hinder edge of the last molar. In *Conepatus* it is prolonged somewhat farther.

Upper Dentition.—Incisors increasing in size from I^1 to I^3; I^3 much the largest of the three. All the incisors expanded behind at the base, as much as in *Conepatus*. Canine of normal size, high-crowned with elongate, oval cross-section at base, with small posterior basal cusp and a faint antero-internal cingulum. Diastema of about 5 mm. behind the canine. P^1 and P^2 absent; P^3 small, two-rooted, with broadly oval cross-section and slight cingular cusp behind; P^4 relatively longer than in the living genera, length equal to or perhaps slightly greater than that of M^1; with a pronounced parastyle broken off so that its height is unknown and its length can only be estimated by the forward extension of the root; paracone high but without its summit; metacone a shearing blade, lower than the paracone, but almost half the entire length of the tooth; protocone with a moderately great transverse extension, but antero-posteriorly extending only about half the length of the tooth, with a prominent cusp at the postero-internal corner, but without a posterior cingulum, so that unlike the living genera the passage into the faint cingulum on the inner side of the metacone is very abrupt. In *Spilogale* and *Mephitis*, a broad posterior cingulum, passing gradually into that on the internal side of the metacone, gives the protocone a triangular shape. In *Conepatus* the protocone extends almost the entire length of the tooth so as to be almost lutrine in appearance. In front of the cusp is a broad basin-shaped cingulum which passes rather abruptly into the parastyle. M^1 antero-posterior less than transverse diameter and about equal to or slightly less than that of P^4. M^1 (fig. 5)

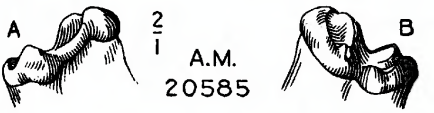

Fig. 5. *Promephitis majori*, A.M.N.H. No. 20585. A, front view of M^1. B, rear view of M^1. Twice natural size.

is approximately square or with slightly inferior antero-posterior diameter in *Mephitis* and *Spilogale*, and in *Conepatus* the antero-posterior diameter is greater than the transverse diameter; metacone as long as paracone but lower; parastyle distinct but weaker than in living genera, metastyle practically absent; protocone forming a crescentic ridge which terminates at little more than half-way across the crown; pronounced internal cingulum, very faint at the antero-internal angle but widening out posteriorly into a broad basin-shaped valley which extends to the base of the metacone; pronounced external cingulum. The external wall of the tooth is much more oblique to the axis of P^4 than is the case in *Mephitis* and *Spilogale*. This is partly due to the presence of a strong metastyle in the living genera.

MANDIBLE.—Compared with *Spilogale arizonae*, which is approximately the same-sized animal, the mandible (fig. 6) is rather more robust and shorter with smaller canines and shorter P_2. In *Mephitis* and *Conepatus* the mandible is relatively even longer. The depth of the ramus exceeds that of any of the recent genera. Its lower border is straight up to the hinder end of M_2 and then steps up to the angle, as in *Mephitis* and *Conepatus*. In *Spilogale* the lower border of the ramus is horizontal or slightly convex from symphysis to angle, and apparently the same is the case in *Promephitis lartetii* and *P. maeotica*. The symphysis is rather gradually sloping, much as in *Spilogale*; it is flatter in *Conepatus*. The coronoid process ascends very steeply and is very high, though the top is missing. The condyle is rather near the angle and does not lie far behind it. The angle is club-shaped as in *Conepatus*, and not so pointed as in *Mephitis* and *Spilogale*.

LOWER DENTITION.—Incisors of equal size and in the same line. In living genera they are apt to differ from one another. Thus in *Conepatus* and *Spilogale arizonae*, I_2 is larger and more backwardly placed than the other two. In some species of *Mephitis*, both I_2 and I_3 are somewhat larger than I_1. Canine very concave behind, slenderer than in living genera, with well marked internal cingulum but practically no posterior cusp. No diastema behind the canine. P_1 absent, P_2 minute, (?) one-rooted; P_3 with oval cross-section expanded at the postero-internal corner and with a slight cusp; anterior keel straight; main posterior keel concave, P_4 like P_3 but larger. The premolars lie more obliquely in the jaw than in *Spilogale* or *Mephitis*, but less so than in *Conepatus*. In *Conepatus* they have stronger inner cingula and cingular cusps and there are diastemata between the first three premolars and behind the canine. M_1 length much greater than the depth of the ramus and much exceeding

that of the premolar series. In this respect it is strikingly different from all the living genera, in which M_1 is either equal in length to or slightly less than the premolar series; trigonid a little longer than talonid; paraconid not very oblique to protoconid, as long as protoconid but lower; metaconid strong but lower than protoconid and almost on the same level with it. In *Spilogale* and *Mephitis* the position of the paraconid is about

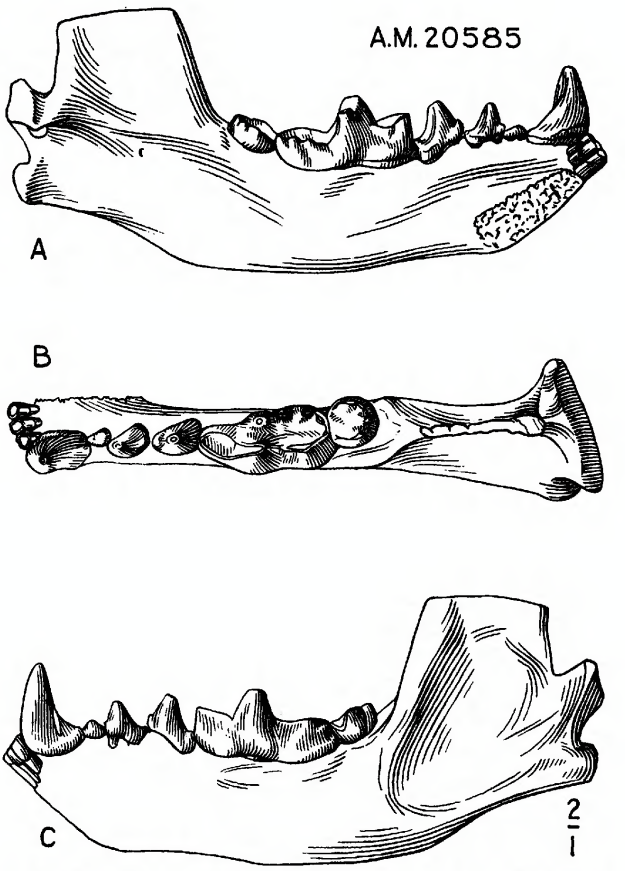

Fig. 6. *Promephitis majori*, A. M. N. H. No. 20585. A, left lower jaw, inner view. B, left lower jaw, crown view. C, left lower jaw, outer view. Twice natural size.

the same but the metaconid is somewhat higher. In *Conepatus* the paraconid is shorter and much more oblique; the metaconid is higher and the trigonid is no longer, sometimes much shorter than the talonid. The talonid in *Promephitis majori* is basin-shaped, having a trenchant hypoconid somewhat worn, and an entoconid on which two low cusps are

MEASUREMENTS OF FOSSIL MEPHITINAE

	Promephitis major	*Promephitis maeotica*	*Promephitis alexejewi*	*Promephitis larteti*	*Promephitis malustenensis*	*Brachyprotoma pristina*
Length of skull from occipital condyles to front edge of incisors	53.6	67.5	....	70.0	....	46.0
Distance from front edge of orbit to front edge of incisors	17.4	....	....	19.0	....	....
Distance from front edge of orbit to occipital condyles	39.1	....	....	50.0	....	....
Distance from lower edge of foramen magnum to front edge of incisors	44.5	59.7	....	....	....	....
Distance from lower edge of foramen magnum to hinder end of palate	27.5	36.0	....	....	....	....
Distance from hinder end of palate to hinder end of middle incisors	18.0	23.7	....	....	....	....
Breadth of skull at mastoid processes	33.0	44.0	....	....	....	....
Breadth of skull at zygomatic arches	37.0	....	....	....	....	....
Minimum breadth of skull behind post-orbital processes	14.7	16.6	....	....	....	....
Breadth of skull between post-orbital processes	17.3	24.0	....	....	....	....
Minimum breadth of skull between orbits	16.6	22.0	....	....	....	....
Breadth of skull at canines	14.0	18.2	....	....	....	app. 21.0
Breadth of palate between hinder ends of P^4	16.3	....	....	....	....	....
Height of skull from occipital condyles to highest point of occiput	20.0	24.4	....	....	....	....
Diameter of orbit	8.5	12.0	....	....	....	....
Length of entire row of incisors	7.5	9.6	....	....	....	....
Distance from front edge of canine to hinder end of M^1	17.1	21.4	....	26.0	....	app. 15.5
Distance from hinder end of canine to front end of P^4	3.0	3.1	....	....	....	3.0
Upper canine — Antero-posterior diameter at base	3.5	4.8	....	....	....	app. 3.8
Upper canine — Transverse diameter at base	2.3	3.3	....	....	....	2.4
Upper canine — Height of crown	app. 5.0	9.7	7.0	....	....	....
P^3 — Antero-posterior diameter	2.0	2.5	....	....	....	....
P^3 — Transverse diameter	1.6	2.0	....	....	....	....

MEASUREMENTS OF FOSSIL MEPHITINAE

		Promephitis majori	*Promephitis maeotica*	*Promephitis alexejevi*	*Promephitis lartetii*	*Promephitis malustenensis*	*Brachyprotoma pristina*
P^4	Antero-posterior diameter for *P. majori* (estimated)	5.6	7.1	8.0	8.0	....	app. 6.0
	Transverse diameter	4.1	5.3	5.0	....	....	app. 4.3
M_1	Antero-posterior diameter	5.6	5.7	5.8	5.0	....	3.7
	Transverse diameter	6.5	9.1	7.6	8.0	....	5.7
Distance between mandibular condyles and front edge of incisors		35.0	38.7?	....	....	....	30.5
Distance from front edge of canine to hinder end of M_2		19.7	26.0	....	25.0	....	....
Distance between hinder end of canine and front end of M_1		6.0	app. 8.0	....	8.0	app. 14.5	6.5
Distance between angular process and top edge of condyle		6.6	app. 7.5	....	....	....	....
Depth of mandibular ramus beneath middle of M_1		7.0	app. 8.5	app. 8.0	....	app. 7.0	5.8
Lower canine	Antero-posterior diameter at base	3.5	....	....	....	....	....
	Transverse diameter at base	1.8	....	....	....	....	....
	Height of crown (measured from hinder end of base along concave keel)	4.5	....	9.0	....	....	....
P_2	Antero-posterior diameter	.9	....	....	....	....	....
	Transverse diameter	.6	....	....	....	....	....
P_3	Antero-posterior diameter	2.0	....	....	....	....	....
	Transverse diameter	1.4	....	....	....	....	....
P_4	Antero-posterior diameter	3.0	....	3.8	....	....	....
	Transverse diameter	2.0	....	2.0	....	....	....
M_1	Antero-posterior diameter	7.9	10.2	10.6	8.0	9.0	7.4
	Transverse diameter	3.5	4.7	4.8	....	3.5	....
	Length of trigonid	4.5	....	5.6	....	....	....
	Length of talonid	3.3	....	5.0	....	....	....
M_2	Antero-posterior diameter	2.4	....	....	....	....	....
	Transverse diameter	2.4	....	....	....	....	....

apparent with a trace of a faint one behind them. *Spilogale* agrees with *P. majori* in the lowness of the entoconid, but the single entoconid cusp in *Mephitis* is much higher, and one of the two present on the entoconid of *Conepatus* is equally high. M_2 is small, approximately round, slightly pointed behind, with one or two cusps both on the internal and on the external side, in both cases indicated by a ridge of somewhat advanced wear. At the posterior end of the crown is another low cusp not much worn. The structure of M_2 seems to be not unlike this in the living genera. In *Conepatus* the outline is almost the same; in *Mephitis* and *Spilogale* it is more elongate, tending towards *Mydaus* and *Trocharion*.

AFFINITIES.—The genus *Promephitis* has already been recorded from Samos by Major (1894, No. 334, p. 29), as a fragmentary ramus, which he referred to *P. lartetii*. It is possible that it really belongs to *P. majori*, but since I cannot recall its dimensions or any special features about it, its exact specific determination must remain doubtful.

The genotype of *Promephitis* is *Promephitis lartetii* Gaudry (1862, p. 46, Pl. VI, figs. 5–7), from Pikermi. *P. maeotica* Alexejew (1915, p. 368) from Southern Russia and *P. alexejewi* Schlosser (1924, p. 11) from Mongolia have more or less provisionally been referred to the same genus. Unfortunately the holotype and only known specimen of *P. lartetii* has been so much crushed and has sustained such damage, that it must be very dangerous definitely to identify any other fossil mephitine with it, even generically. Both Alexejew (1915, p. 371) and Schlosser (1924, p. 12) seem to have been unaware of the condition of the Pikermi specimen, and the latter author has naturally expressed considerable doubt as to whether *P. maeotica* and *P. alexejewi* belonged to *Promephitis*. In the circumstances, I think it is possible that the differences of these two species from *P. lartetii* may be really less than Alexejew and Schlosser imagine, so that I am even less inclined than they to establish a new genus for them.

It is easy to compare the Samos specimens effectively with *Promephitis maeotica*, since both the skull and mandible on which that species was established are moderately well preserved. The comparison reveals so many similar features which indicate a stage of development quite different from any of the living genera that I think it would serve no useful purpose to separate them generically. Even by zoologists, the points in which they differ might hardly be regarded as sufficient for generic distinction, and in the case of Pontian species it seems more appropriate to view them as evidence for the existence merely of two different species of the same genus.

The most important features in which these two species resemble each other are the following: 1, a short, broad face and occiput; 2, a similar side and back profile; 3, brain case low and flattened; 4, auditory bulla much depressed and similar in size and position of the meatal tube; 5, strong mastoid process; 6, elongate orbit; 7, palate not extended backward beyond the last molar; 8, premolar series reduced; 9, large P^4 and M_1; 10, P^4 with similar protocone not triangular, nor extending more than half the entire length of the tooth; 11, M_1 similar in shape, with metaconid strong but lower than protoconid, entoconid low; 12, M^1 having transverse greater than antero-posterior diameter; 13, M_1 small and round.

There are two differences between these species which might conceivably be considered as of generic significance. It will be seen that although relative to their size P^4 is equally large in both, M^1 has a much greater antero-posterior diameter and a much smaller transverse diameter in *P. majori*. The great excess of the latter dimension in *P. maeotica* is largely due to the great development of the internal cingulum which may be comparable to what exists in the genus *Conepatus* and therefore a progressive feature. On the contrary, in *Brachyprotoma pristina* (Brown, 1908, p. 178) the similar excess of the transverse diameter in M^1 is independent of the internal cingulum, and the shape of this tooth seems to be really extremely primitive. The difference between the antero-posterior and transverse diameters is less marked in *P. lartetii* and *P. alexejewi*, but nevertheless is more so than in *P. majori*. One must, therefore, infer that *P. majori* represents a slightly more advanced stage than the other three species. The other difference is that in P. *maeotica* and in *P. lartetii* the lower border of the ramus seems to be straight, instead of stepping up to the angle as in *P. majori*.

The stronger post-orbital processes in *P. majori* and the absence of the external cingulum in M_1 do not seem in any case to be more than specific.

Brachyprotoma from the Pleistocene of Pennsylvania and Arkansas, in spite of the absence of P^1 and P^2 clearly possesses many primitive characters such as the large size of P^4 and M_1; the large size of the anterior premolars; the smaller protocone in P^4; the weaker metaconid in M_1; the transverse elongation of M^1. It seems to be a survival of a much more primitive form than any species of *Promephitis*.

The mandibular ramus described by Simionescu (1930, pp. 93, 140) from the Upper Pliocene of Malusteni under the name of *Promephitis malustenensis*, is insufficiently figured and described to enable its affini-

ties to be readily grasped. The ramus is far too long and the premolars too large for it to find a place in the genus *Promephitis*. If mephitine at all, it is probably more nearly allied to *Trocharion* and *Mydaus*.

A solitary specimen of M_1 from the Bohnerz of Melchingen was referred by Schlosser (1902, p. 146, Pl. II (VII), figs. 14, 16) to the genus *Promephitis* with the specific designation of *gaudryi*. I have elsewhere (Pilgrim, 1933, p. 859) expressed the opinion that this tooth is probably generically if not specifically identical with *Trocharion albanense* Major (Major, 1903, p. 536). Dr. Helbing, who has examined the specimen, has since been good enough to confirm this.

REMARKS.—Throughout the description of the holotype of *P. majori*, comparisons with each one of the living genera have been made. While it shows features in common now with one and now with another of these, yet in the structure of the carnassial teeth and the upper molar it is certainly more primitive than any of them. In the shortening of the anterior part of the face and jaw, *Promephitis* exhibits a precocious reduction which seems to imply that it stands on a different branch from any of the existing genera and probably left no descendants. *Spilogale*, though approaching it more closely than *Mephitis* and *Conepatus*, is separated by its inflated bulla and weak mastoid process. I have touched on the question of the evolution of the Mephitinae elsewhere (Pilgrim, 1933, pp. 859, 864), and can add nothing more of value. The origin of the three living genera is in doubt. *Brachyprotoma* is certainly not their direct ancestor, and it seems likely that they represent different lineages which emigrated to America from a region still unknown. *Trocharion*, of the Upper Miocene of Europe, and *Mydaus*, now living in Java, seem to approach more nearly my conception of what the primitive mephitine must have been.

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